

WHAT IS CLAIMED IS:

1. A method of forming a package for an integrated circuit device, comprising:
forming contact pads on a top layer of a package substrate; and
forming a plate layer on the top layer of the package substrate, the plate layer being located in an area outside of the contact pads, the plate layer having a thickness about equal to a thickness of the pads.
2. The method of claim 1, further comprising:
forming a layer of conductive material on the top surface of the package substrate;
and
removing portions of the conductive material layer to form the contact pads and to form a group of channels, each of the contact pads being surrounded by one of the channels, wherein the contact pads and the plate layer are formed from the conductive material layer, wherein the channels separate the plate layer from at least some of the contact pads, and wherein each channel is surrounded by the plate layer outside of the channel.
3. The method of claim 1, further comprising:
forming a protective layer over the contact pads and the plate layer; and
removing portions of the protective layer from the contact pads to expose the contact pads.
4. The method of claim 3, wherein the protective layer comprises a material selected from a group consisting of an oxide and an organic material.
5. The method of claim 3, further comprising:
soldering a solder ball on each of at least some of the contact pads; and
hindering the solder balls from bonding to the plate layer with the protective layer.

6. The method of claim 3, further comprising soldering a chip to the contact pads using solder balls, such that the solder balls are sandwiched between the chip and the package substrate, and such that the contact pads are electrically coupled to the chip via the solder balls.
7. The method of claim 6, further comprising:
 - injecting an underfill material between the package substrate and the chip, as well as substantially around the solder balls; and
 - curing the underfill material to form an underfill material layer between the chip and the package substrate with the solder balls embedded therein.
8. The method of claim 3, wherein the protective layer comprises an oxide material selected from a group consisting of copper oxide, aluminum oxide, nickel oxide, and metal oxide.
9. The method of claim 1, wherein the contact pads and the plate layer each comprises a metal selected from a group consisting of copper, aluminum, nickel, gold, and silver.
10. A method of forming a package for an integrated circuit device, comprising:
 - forming a layer of conductive material on a top layer of a package substrate; and
 - removing a portion of the conductive material layer to form channels, each channel defining a corresponding contact pad surrounded by the channel, wherein each contact pad is formed from the conductive material layer, and wherein each channel is surrounded by a remaining portion of the conductive material layer outside of the channel.
11. The method of claim 10, further comprising:
 - forming an oxide layer over the contact pads, the channels, and the remaining portion of the conductive material layer; and

removing portions of the oxide layer from the contact pads to expose the contact pads.

12. The method of claim 11, wherein the oxide layer comprises a material selected from a group consisting of copper oxide, aluminum oxide, nickel oxide, and metal oxide.

13. The method of claim 11, further comprising:
soldering a solder ball on each of at least some of the contact pads; and
hindering the solder balls from bonding to the remaining portion of the conductive material layer surrounding the channels with the oxide layer.
14. The method of claim 11, further comprising soldering a chip to the contact pads using solder balls, such that the solder balls are sandwiched between the chip and the substrate, and such that the contact pads are electrically coupled to the chip via the solder balls.
15. The method of claim 14, further comprising:
injecting an underfill material between the package substrate and the chip, as well as substantially around the solder balls; and
curing the underfill material to form an underfill material layer between the chip and the package substrate with the solder balls embedded therein.
16. The method of claim 10, wherein the conductive layer comprises a metal selected from a group consisting of copper, aluminum, nickel, gold, and silver.
17. The method of claim 10, further comprising soldering a solder ball on each of at least some of the contact pads.
18. The method of claim 10, further comprising soldering a chip to the contact pads using solder balls, such that the solder balls are sandwiched between the chip and the package substrate and such that the contact pads are electrically coupled to the chip via the solder balls.
19. The method of claim 18, further comprising:
injecting an underfill material between the package substrate and the chip, as well as substantially around the solder balls; and

curing the underfill material to form an underfill material layer between the chip and the package substrate with the solder balls embedded therein.

20. A semiconductor device, comprising:
 - a package substrate having a top layer, the top layer having a group of conductive vias formed therethrough;
 - a layer of conductive material formed on the top layer of the package substrate;
 - a group of channels formed in the conductive material layer about at least some of the vias to define a group of contact pads on the vias; and
 - a chip electrically coupled to the package substrate through the contact pads.
21. The semiconductor device of claim 20, wherein the conductive layer comprises a metal selected from a group consisting of copper, aluminum, nickel, gold, and silver.
22. The semiconductor device of claim 20, wherein the conductive vias comprise a metal selected from a group consisting of copper, aluminum, nickel, gold, and silver.
23. The semiconductor device of claim 20, further comprising an oxide layer formed over the conductive layer, wherein portions of the oxide layer have been removed on at least some of the contact pads.
24. The semiconductor device of claim 23, further comprising solder balls soldered on at least some of the contact pads, wherein the chip is electrically coupled to the contact pads on the package substrate via the solder balls.
25. The semiconductor device of claim 20, further comprising solder balls soldered on at least some of the contact pads, wherein the chip is electrically coupled to the contact pads on the package substrate via the solder balls.